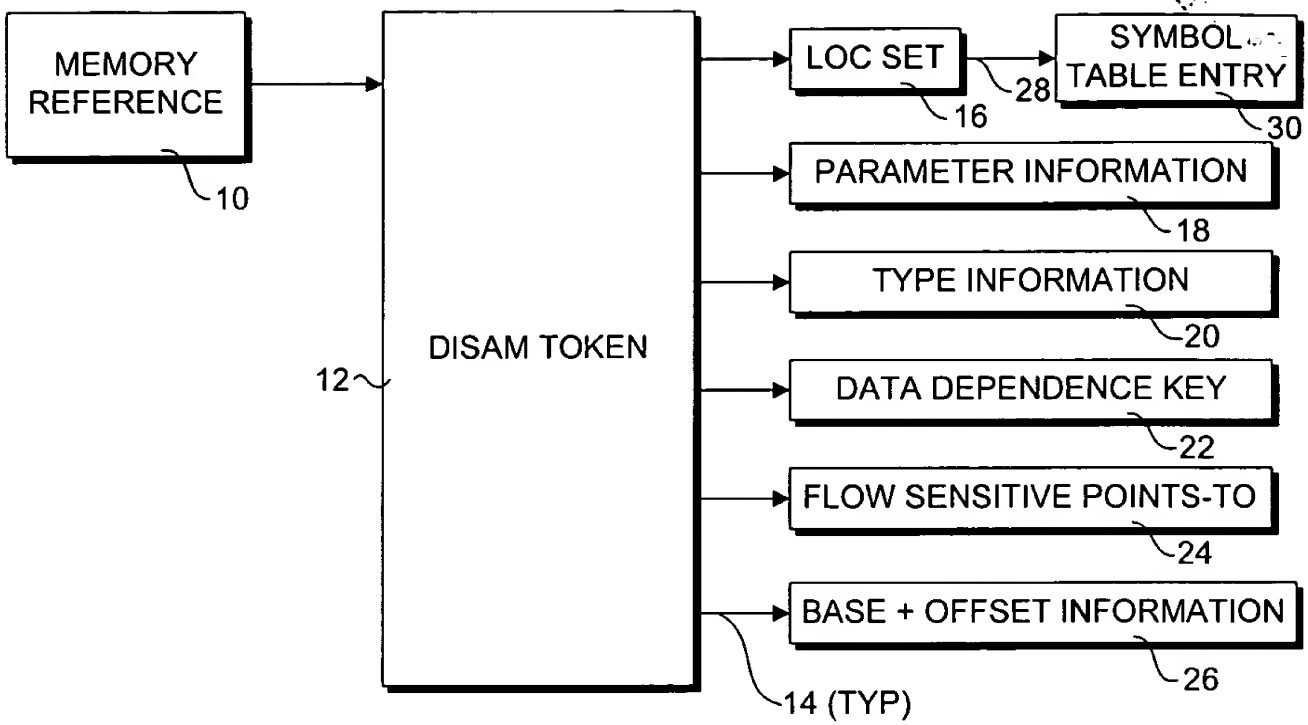

MEMORY REFERENCE
10
DISAM TOKEN
12
14 (TYP)
LOC SET
16
28
SYMBOL TABLE ENTRY
30
PARAMETER INFORMATION
18
TYPE INFORMATION
20
DATA DEPENDENCE KEY
22
FLOW SENSITIVE POINTS-TO
24
BASE + OFFSET INFORMATION
26

FIG. 1

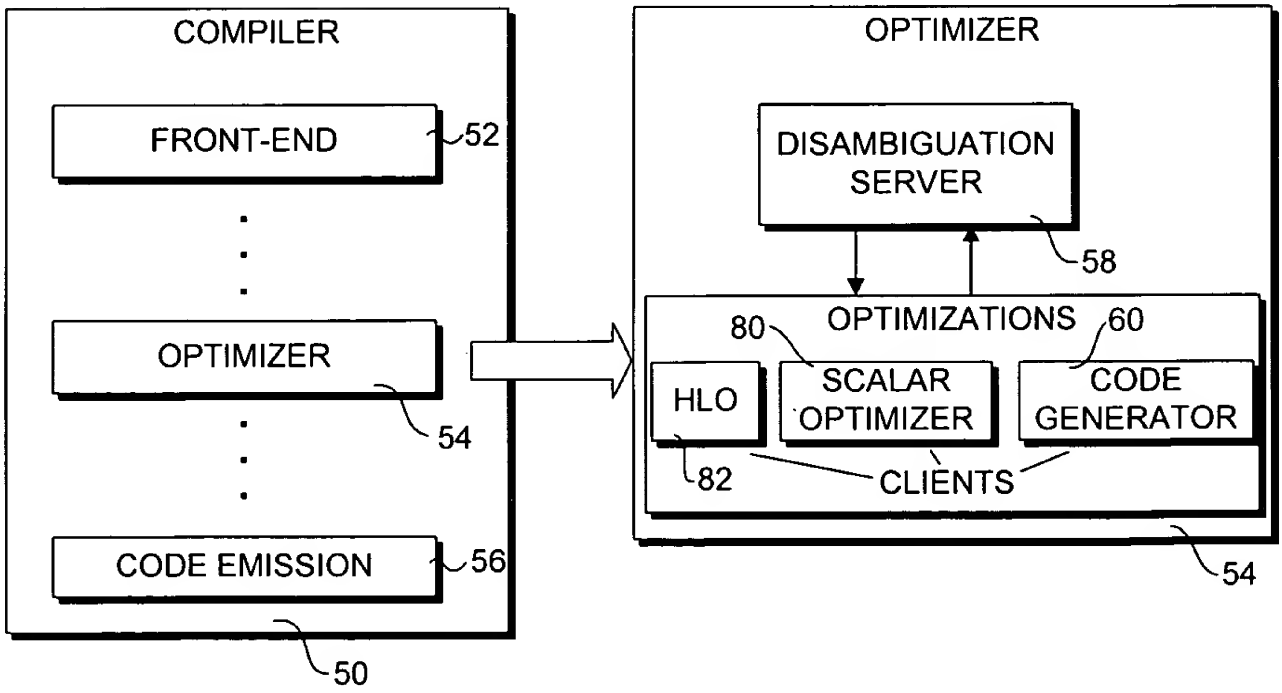

COMPILER
FRONT-END
52
OPTIMIZER
54
CODE EMISSION
56
50
OPTIMIZER
DISAMBIGUATION SERVER
58
OPTIMIZATIONS
60
80
HLO
SCALAR OPTIMIZER
CODE GENERATOR
82
CLIENTS
54

FIG. 5

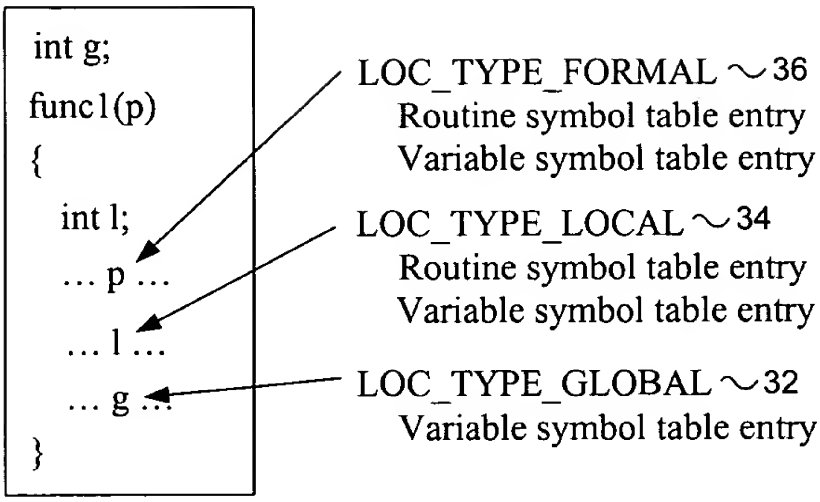


FIG. 2A

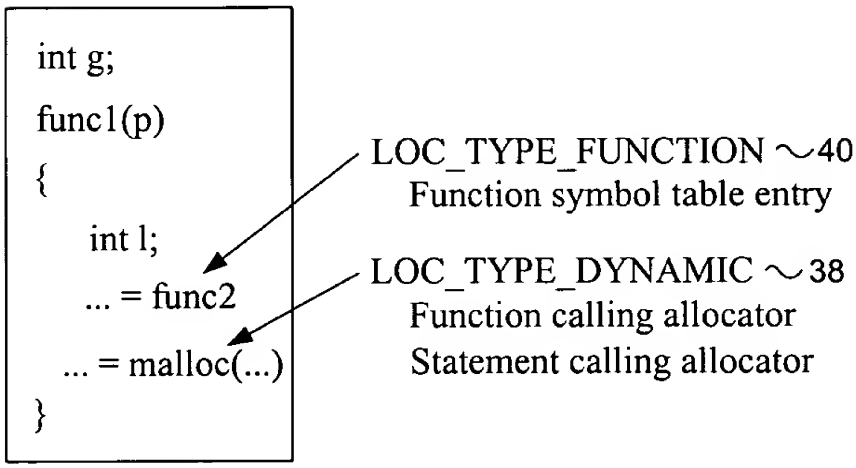


FIG. 2B

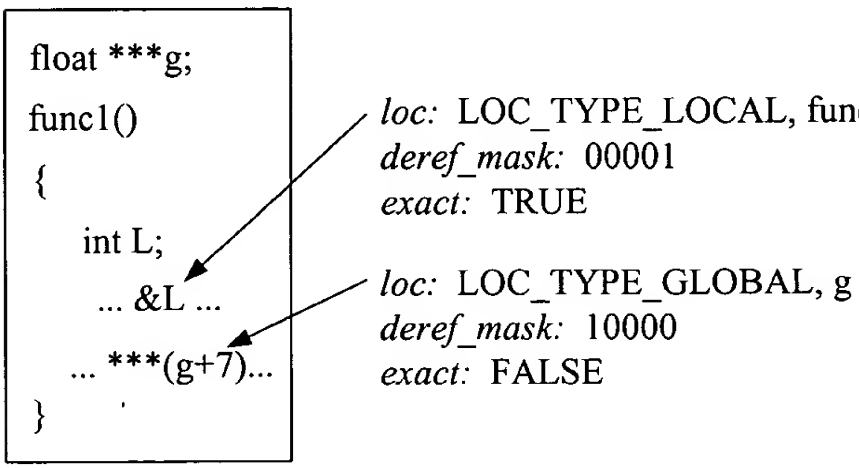
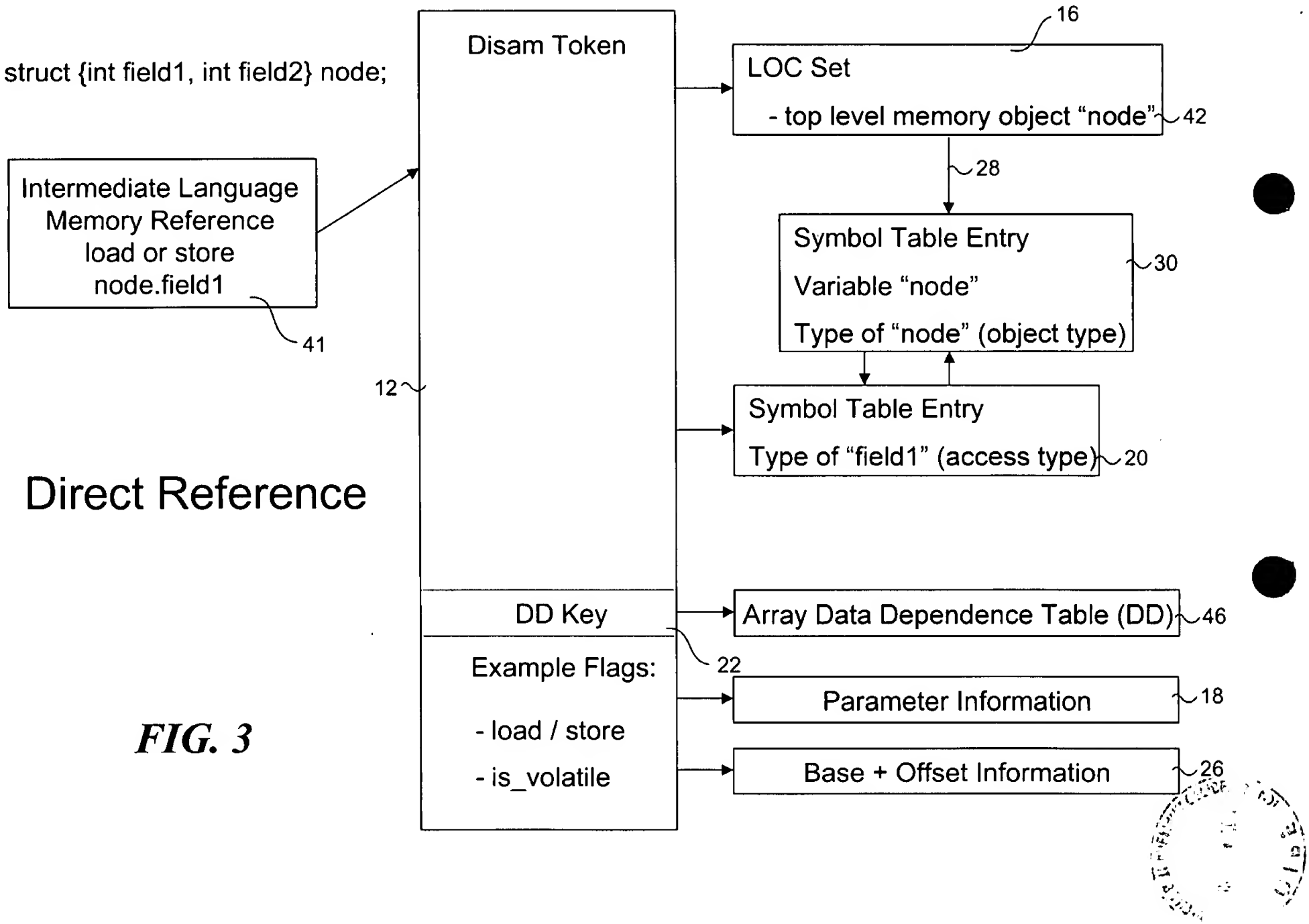


FIG. 2C



Direct Reference

FIG. 3

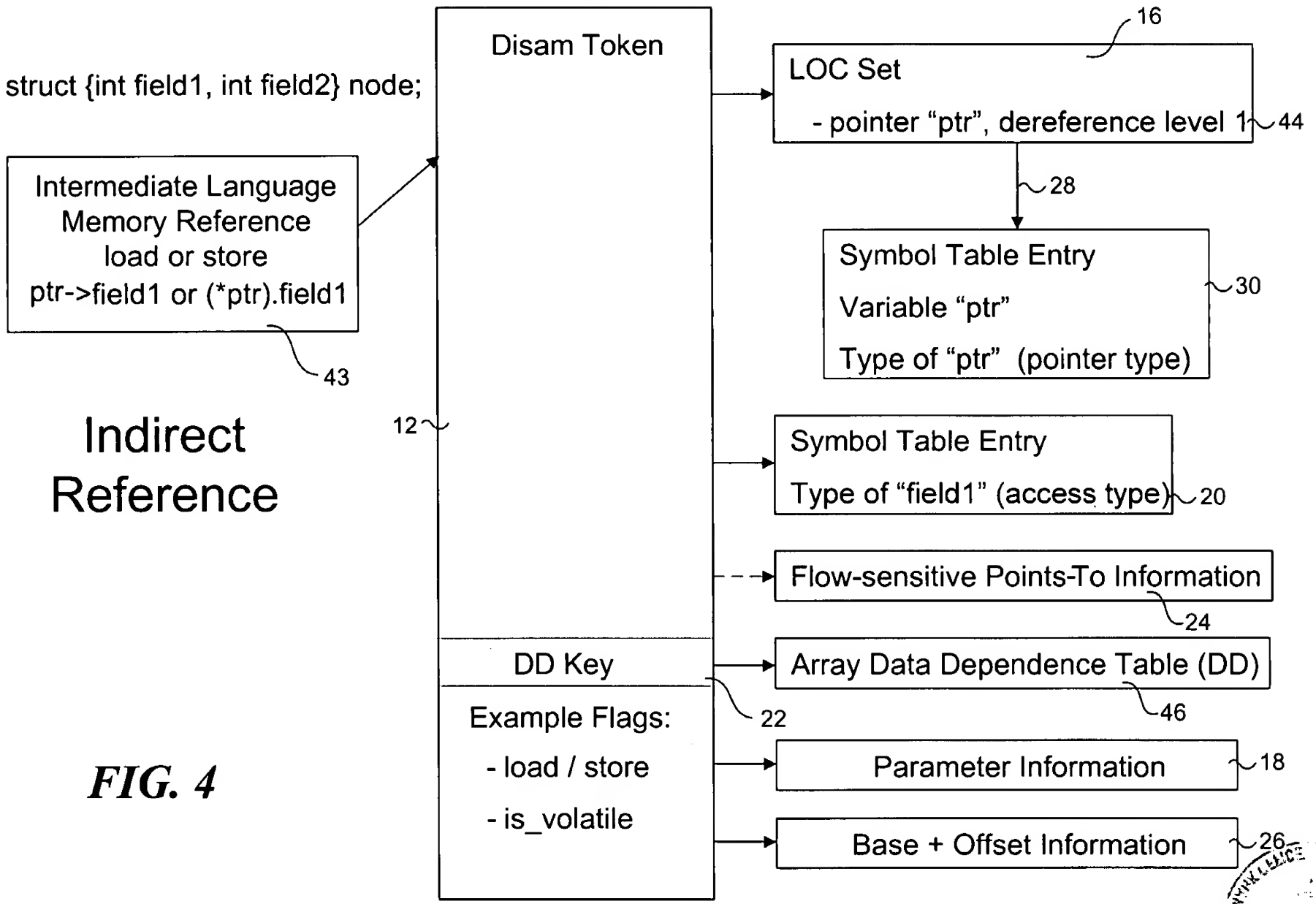


FIG. 4

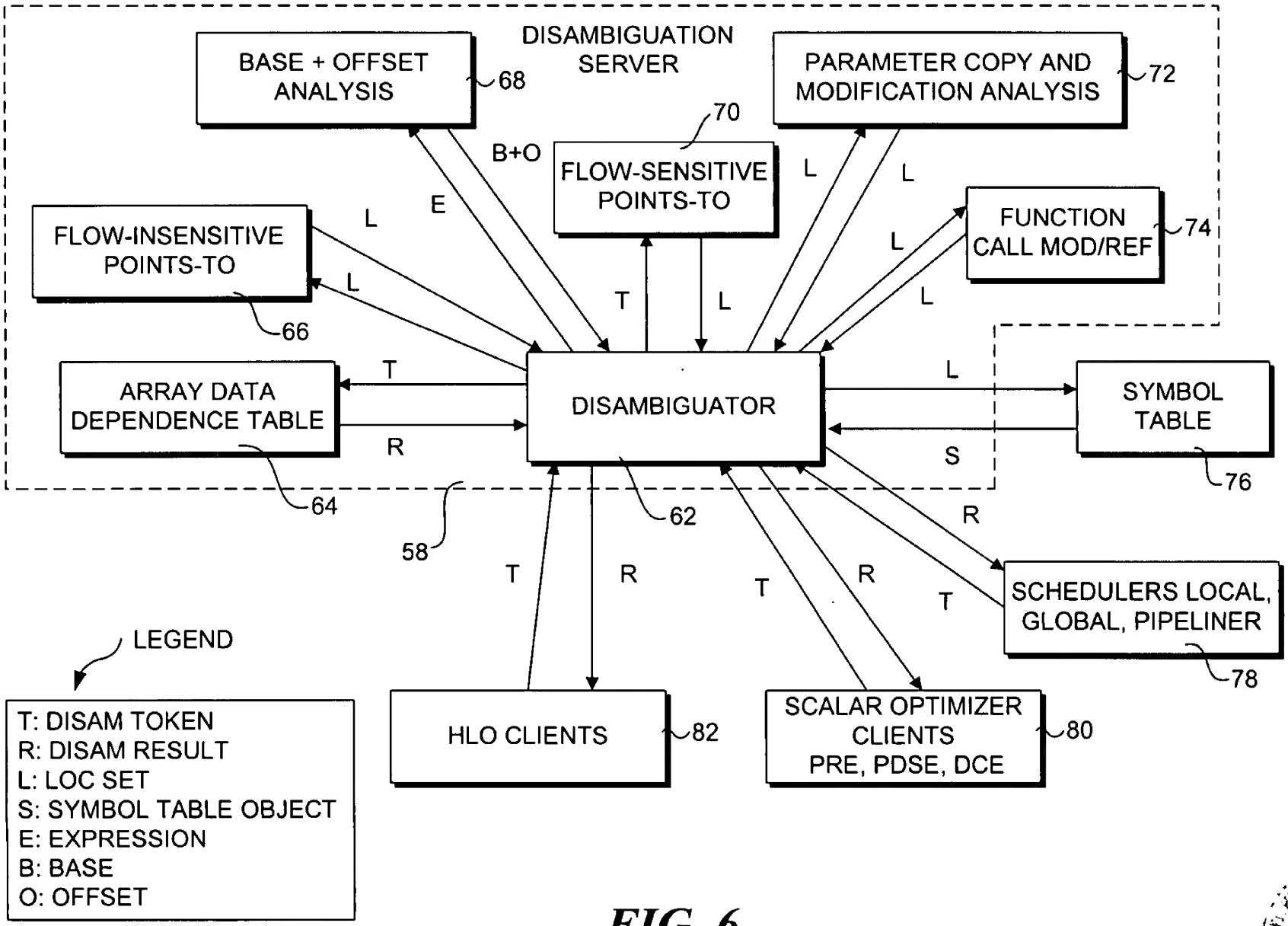


FIG. 6

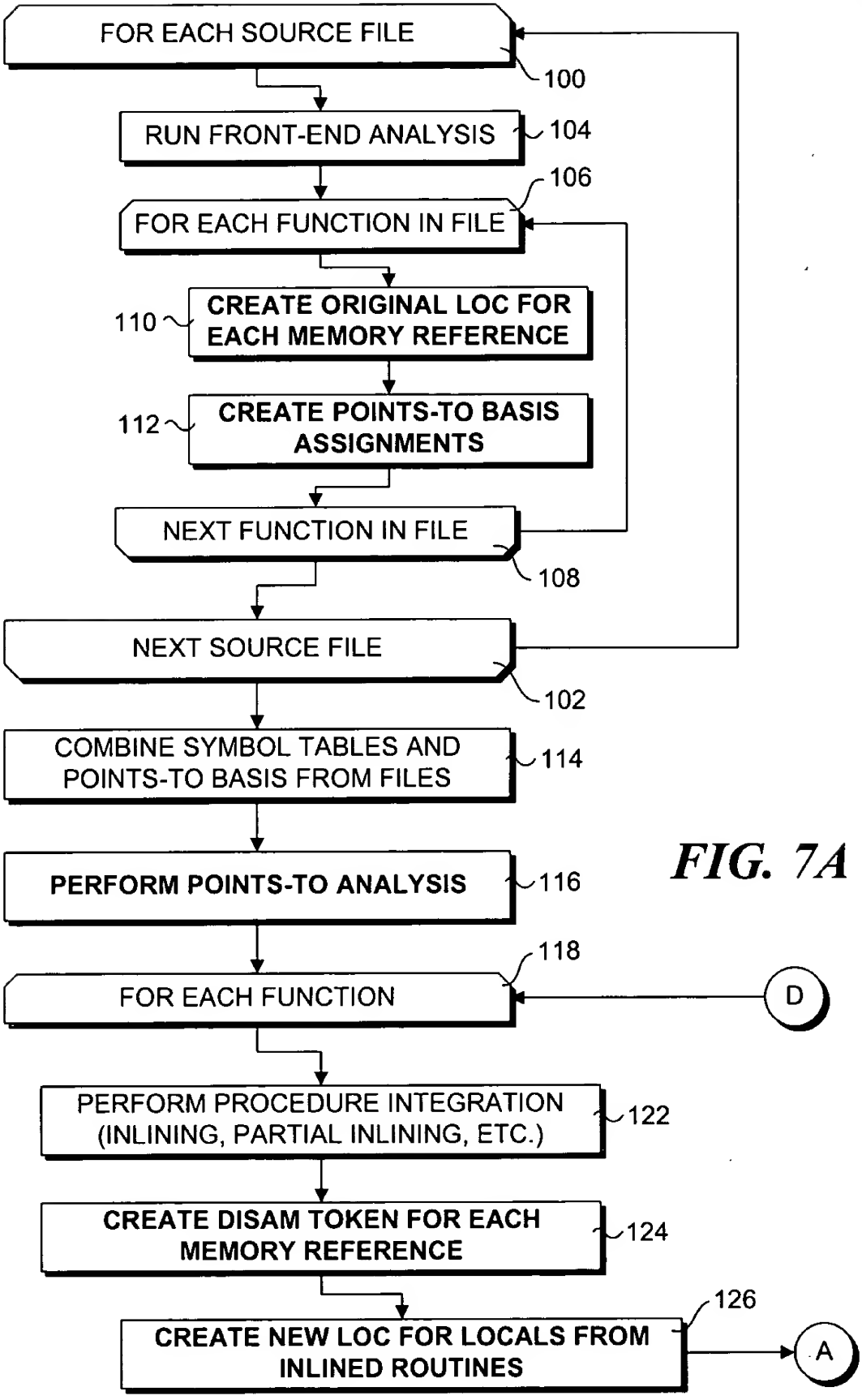


FIG. 7A

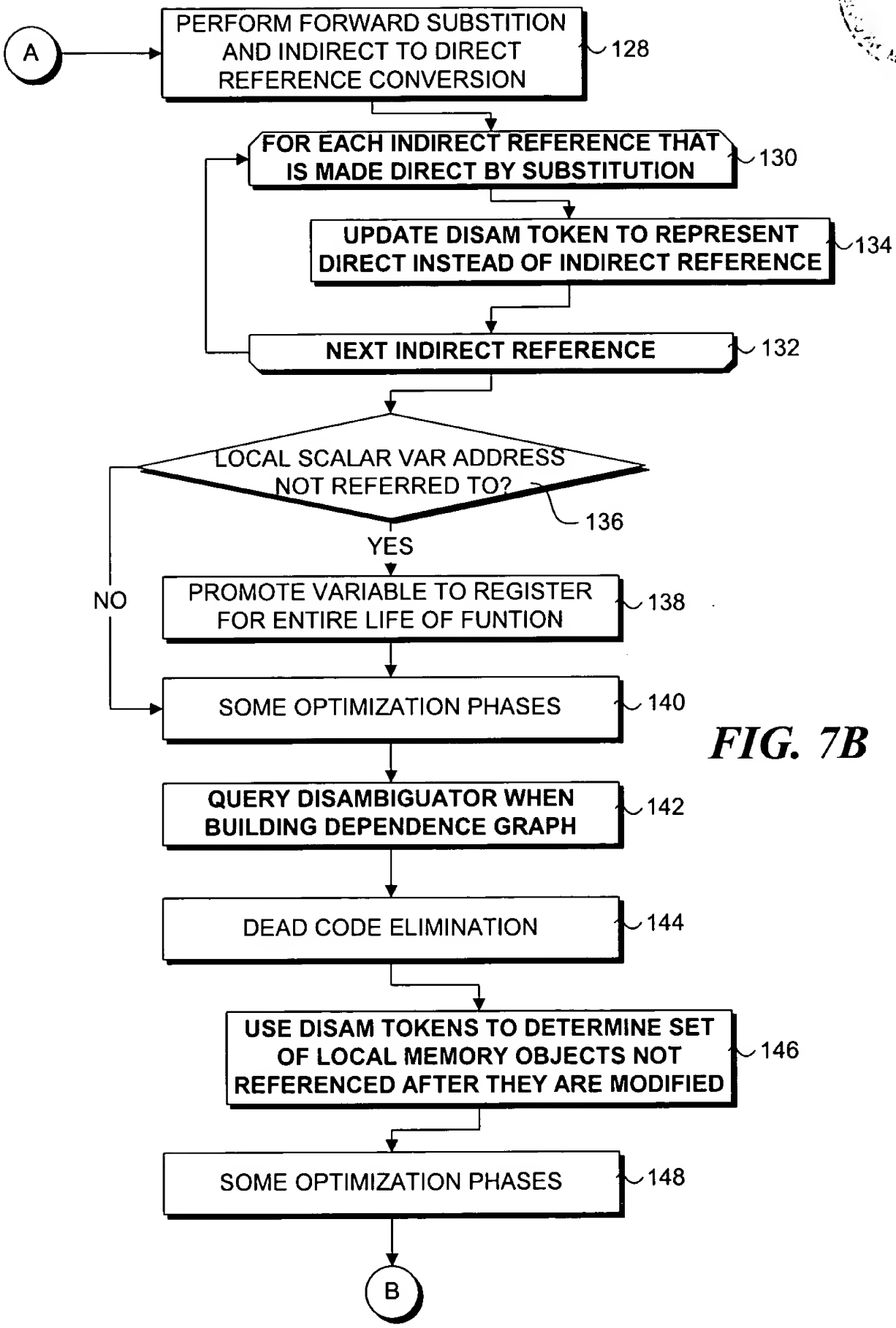


FIG. 7B

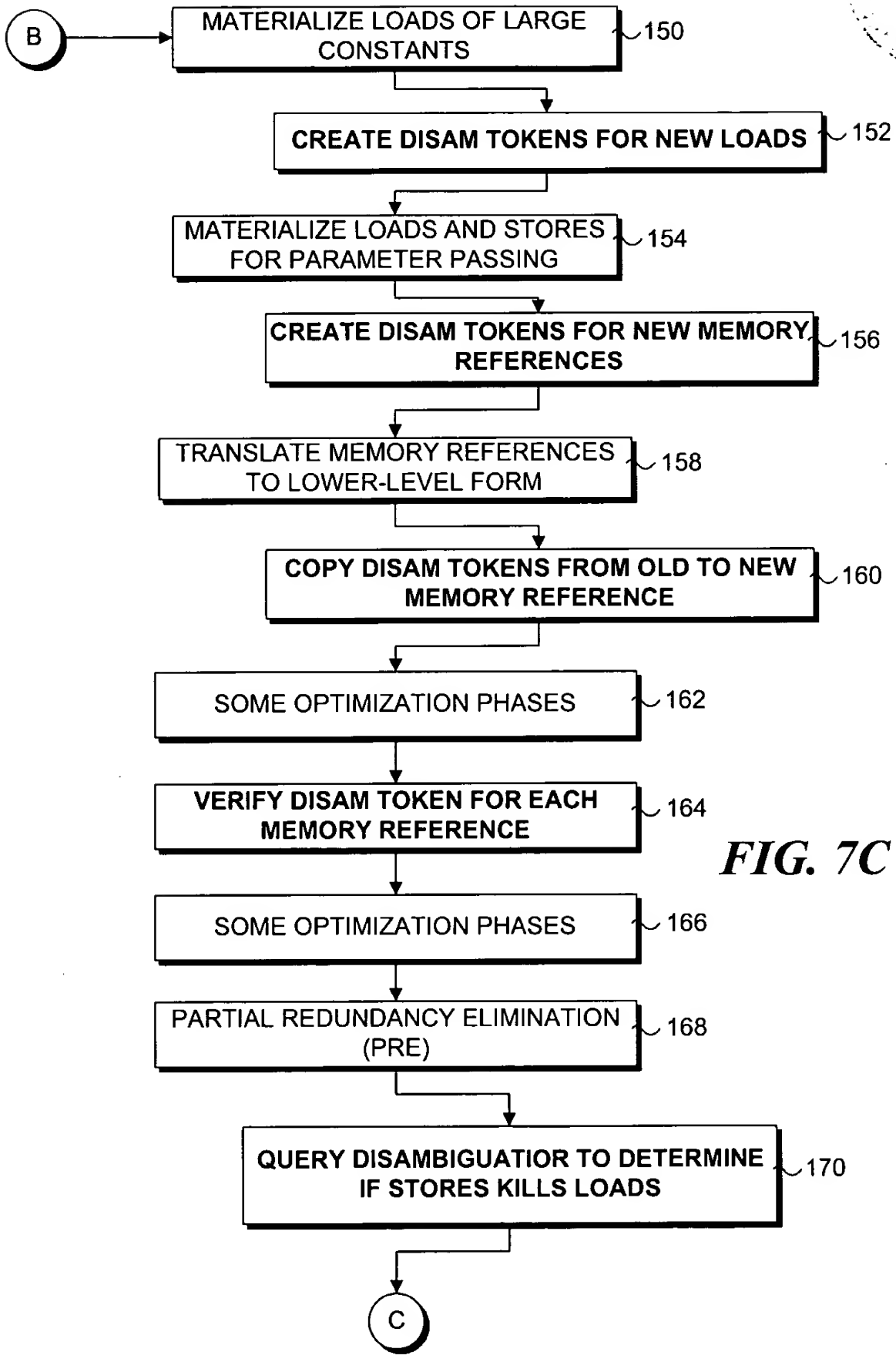


FIG. 7C

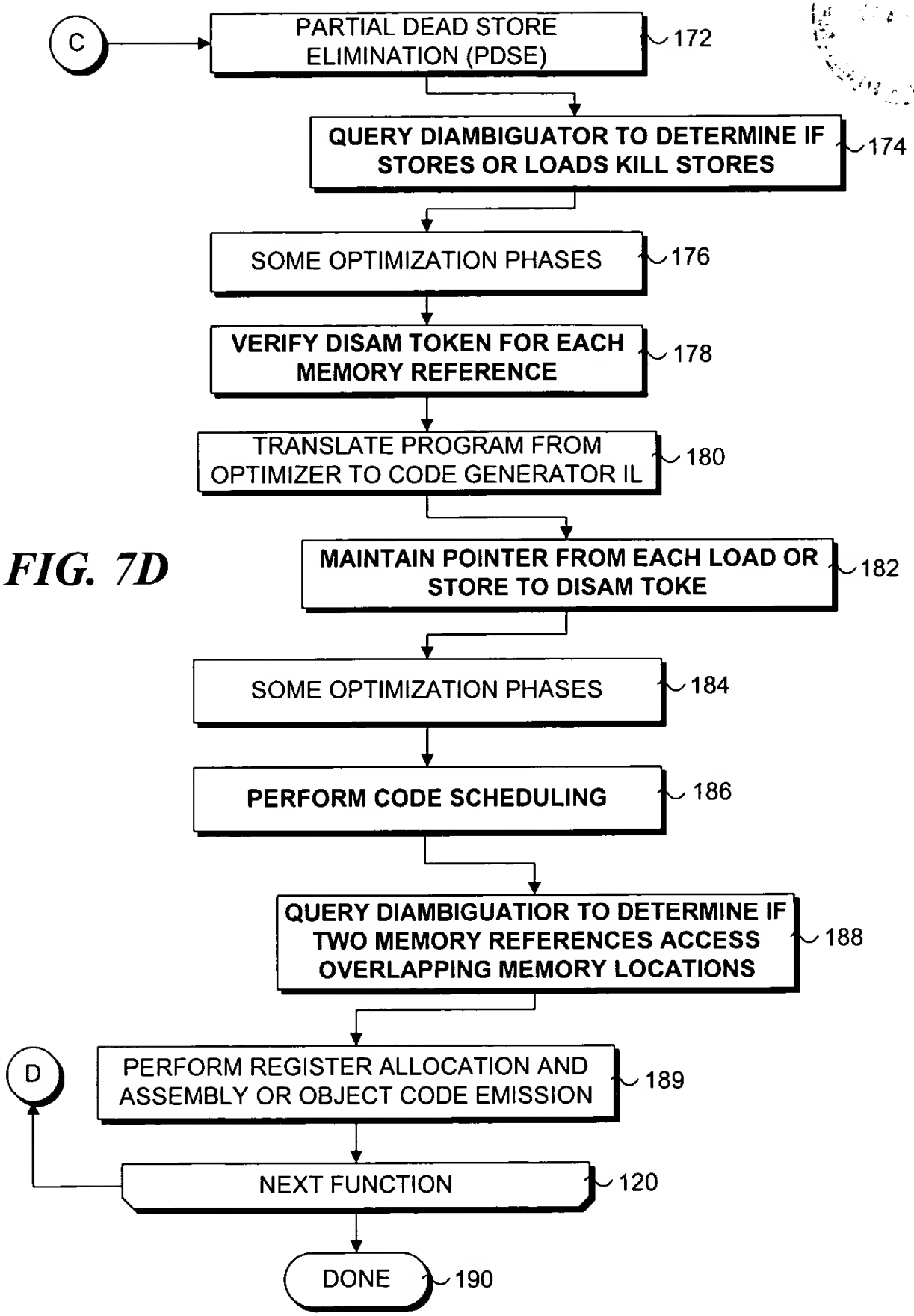


FIG. 7D

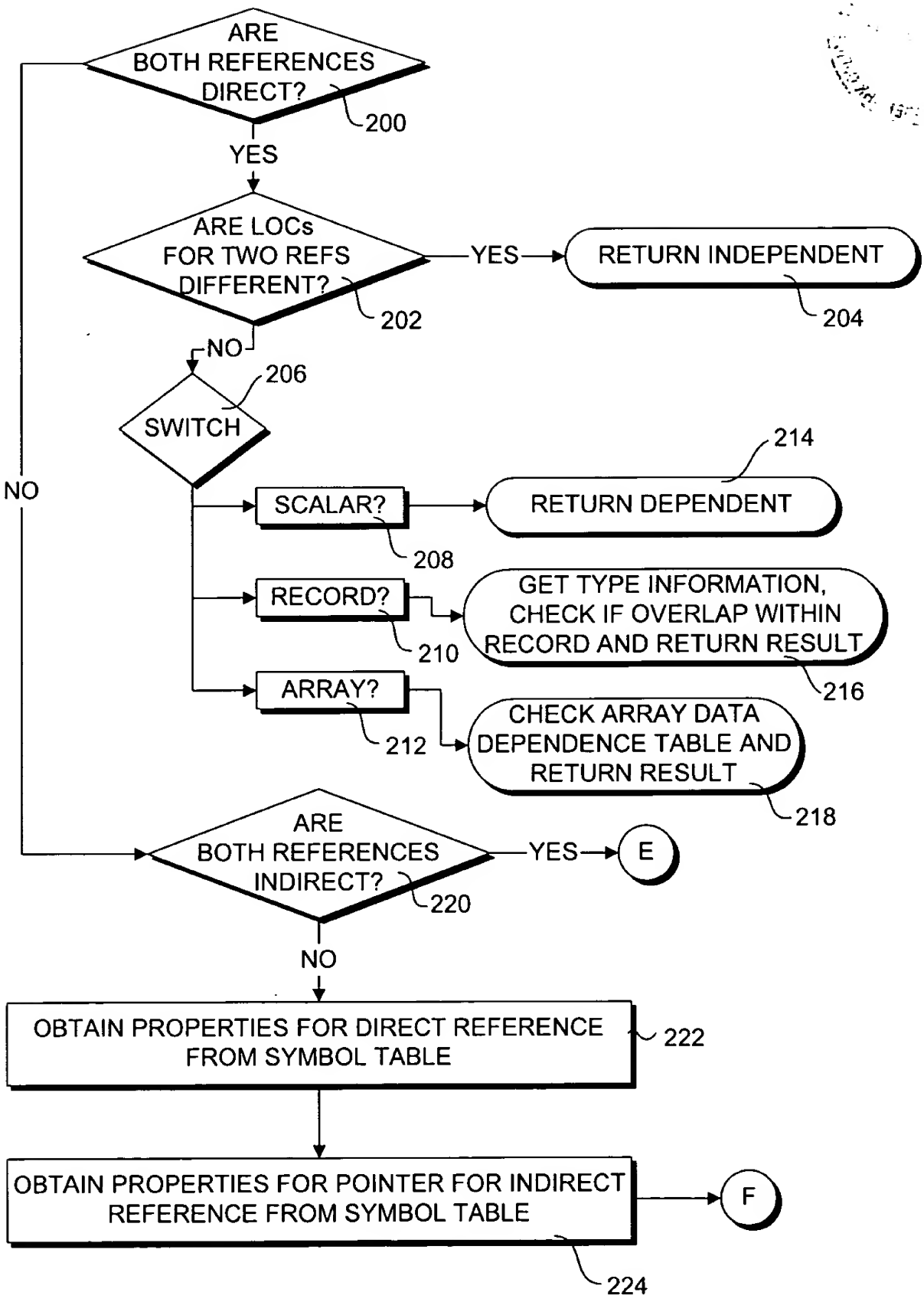

ARE BOTH REFERENCES DIRECT?
200
YES
ARE LOCs FOR TWO REFS DIFFERENT?
202
YES
RETURN INDEPENDENT
204
NO
206
SWITCH
NO
214
SCALAR?
208
RETURN DEPENDENT
RECORD?
210
GET TYPE INFORMATION, CHECK IF OVERLAP WITHIN RECORD AND RETURN RESULT
216
ARRAY?
212
CHECK ARRAY DATA DEPENDENCE TABLE AND RETURN RESULT
218
ARE BOTH REFERENCES INDIRECT?
220
YES
E
NO
OBTAIN PROPERTIES FOR DIRECT REFERENCE FROM SYMBOL TABLE
222
OBTAIN PROPERTIES FOR POINTER FOR INDIRECT REFERENCE FROM SYMBOL TABLE
F
224

FIG. 8A

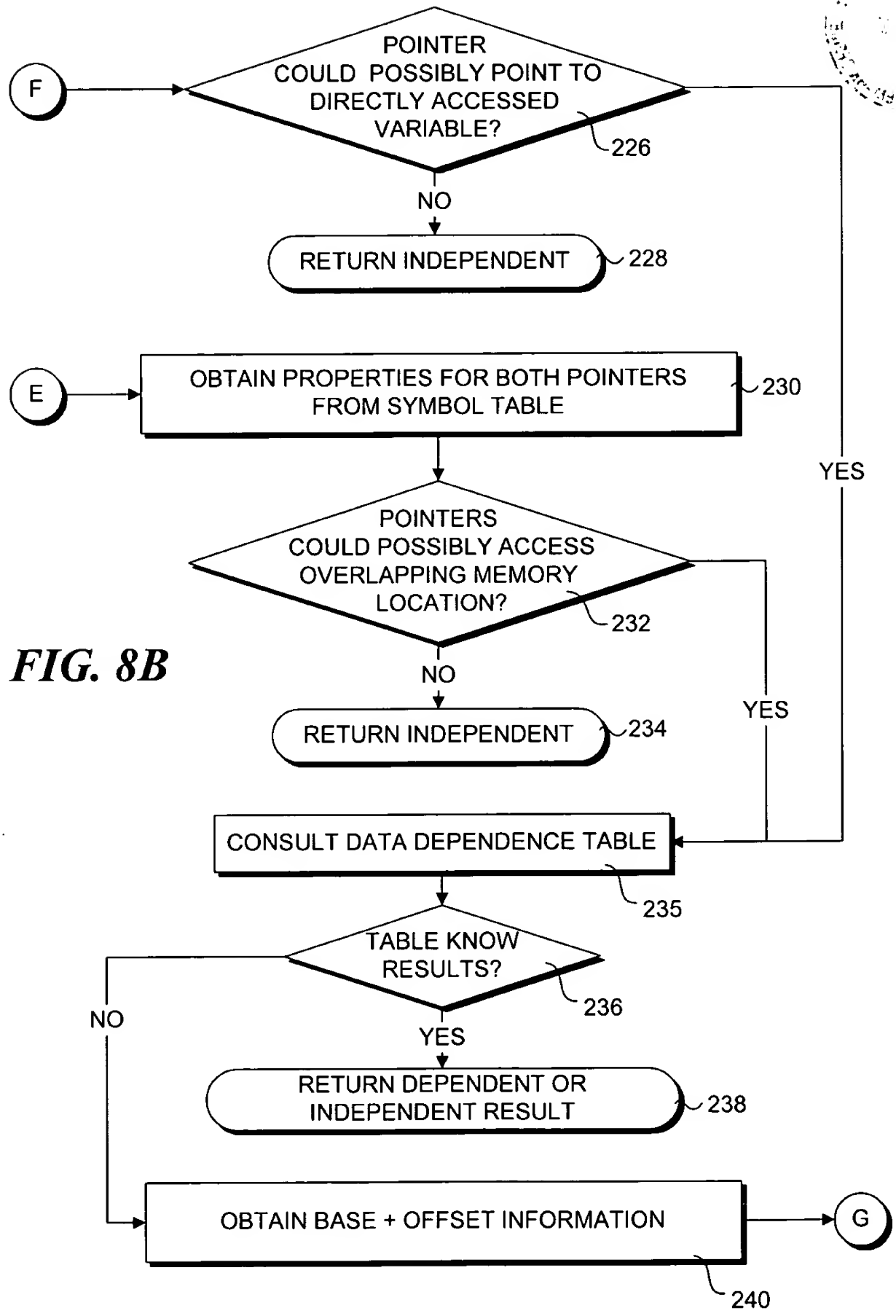

F
POINTER COULD POSSIBLY POINT TO DIRECTLY ACCESSED VARIABLE?
226
NO
RETURN INDEPENDENT
228
E
OBTAIN PROPERTIES FOR BOTH POINTERS FROM SYMBOL TABLE
230
YES
POINTERS COULD POSSIBLY ACCESS OVERLAPPING MEMORY LOCATION?
232
NO
RETURN INDEPENDENT
234
YES
CONSULT DATA DEPENDENCE TABLE
235
TABLE KNOW RESULTS?
236
NO
YES
RETURN DEPENDENT OR INDEPENDENT RESULT
238
OBTAIN BASE + OFFSET INFORMATION
240
G

FIG. 8B

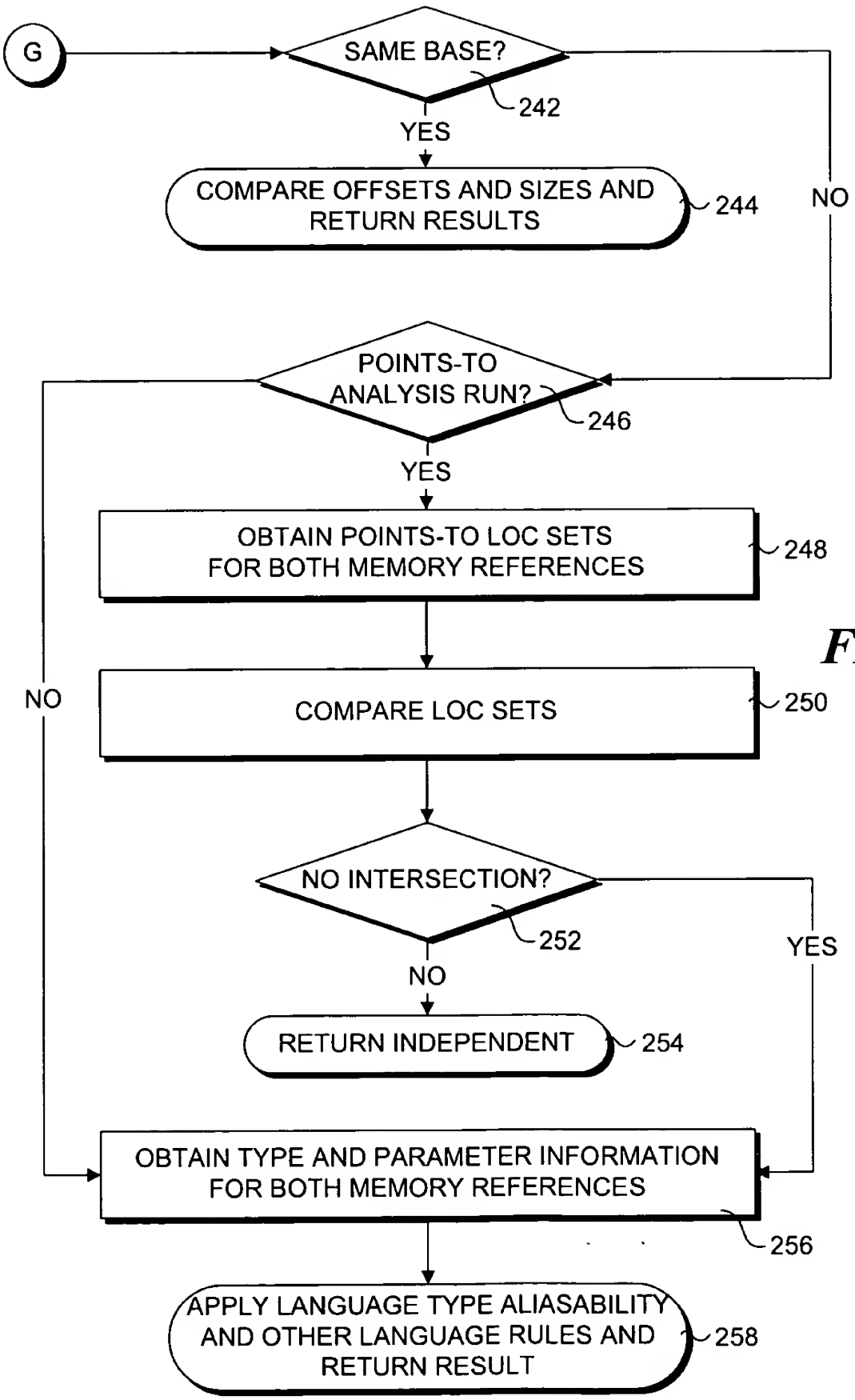


FIG. 8C

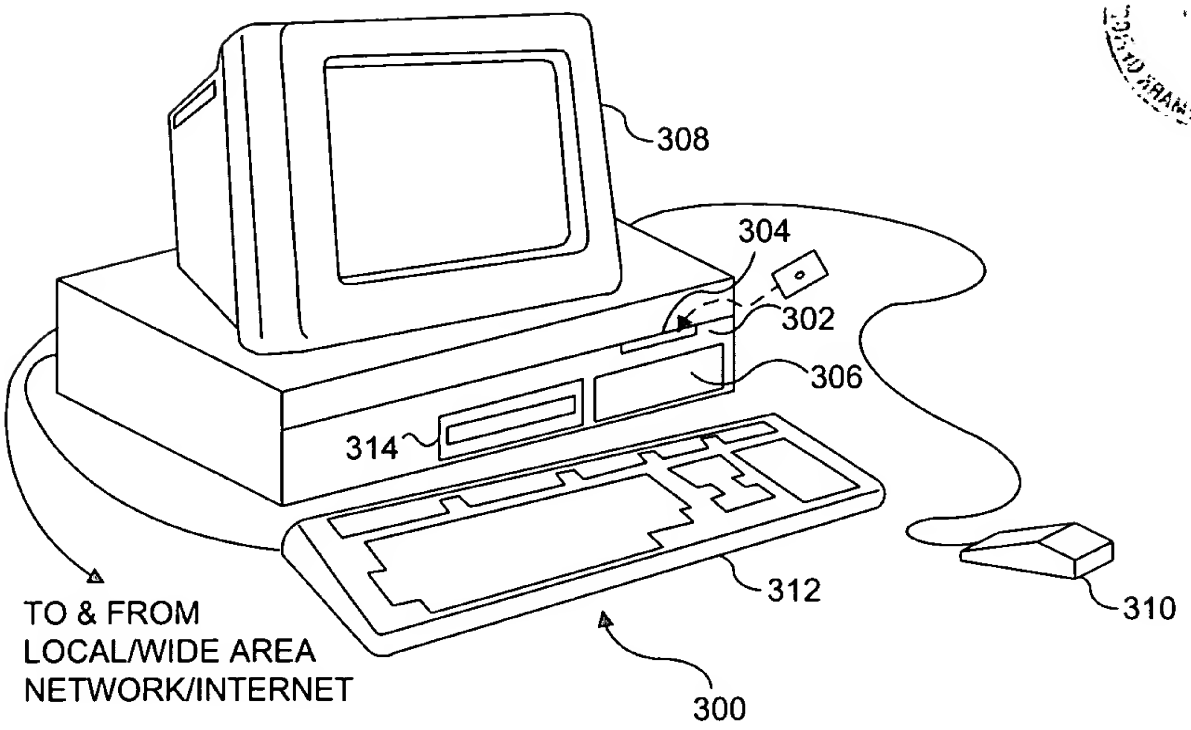

308
304
302
306
314
312
310
TO & FROM
LOCAL/WIDE AREA
NETWORK/INTERNET
300

FIG. 9